Therefore $-F/1{,}013 - F(20.85)/16{,}307 + 395 + 1{,}874 = 0.$

From the above equation, the effective prestress is found to be

$$F = 1{,}001{,}300 \text{ lbs} = 1{,}001.3 \text{ kips } (4{,}453.8 \text{ kN}).$$

Since the initial tension for each of the 36 strands was 137.9 kN (31 kips), the total initial prestress would be $F_i = 36 \times 31 = 1{,}116$ kips (4,964 kN). So the loss of prestress at the time of testing would be 10.4%.

4.5.2 Fatigue Test

Crack Development — As shown in Table 4.4, the first segment of 200,000 cycles of fatigue loading was applied after the initial three static load tests. Since the fatigue load range was from 133.5 kN (30 kips) to 827.7 kN (186 kips) and the upper limit was less than the maximum load reached in the first static load test, the fatigue loading had little impact on the crack development of the girder. However, the follow-up test, Static Load B, was applied to a load of 1,068 kN (240 kips) and new flexural cracks developed while old cracks extended. The cracks were located within the central 3.66 m (12 ft.) of the girder and their spacing were reduced to the range of 203 to 254 mm (8 to10 in.). The maximum crack length was increased to 813 mm (32 in.) from the bottom of the girder. The maximum crack width was 0.4 mm (0.016 in.)

After the first 500 cycles of overloading, Static Load C was executed. Both of these tests, with load being carried to 1,130 kN (254 kips), had a major influence on the crack development. New cracks were induced and old crack propagated. The cracks now occupied the central 4.12 m (13.5 ft.) of the girder. The crack width was measured to be 0.51 mm (0.02 in.). Though the crack spacing remained the same, the maximum